REMARKS

Upon entry of the present amendment, claims 1-14 will remain pending in the above-identified application and stand ready for further action on the merits. In the instant amendment, each of pending claims 2 and 8 have been amended to clarify that "*the dots are regularly arranged and also are separated from each other ...*" Support for the amendment to claims 1 and 8 occurs in each of Figures 1 and 2 of the instant specification (*which are reproduced immediately below for the Examiner's convenience*).

Fig. 1

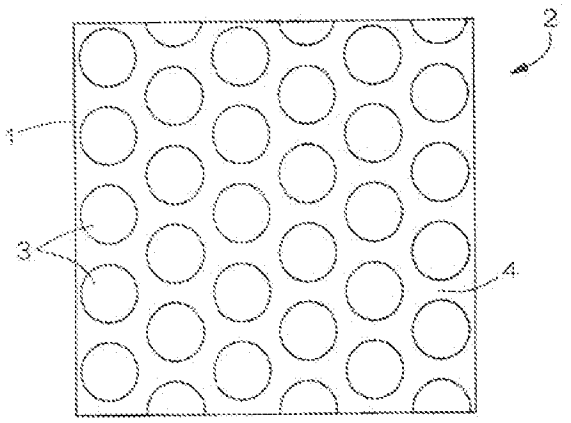
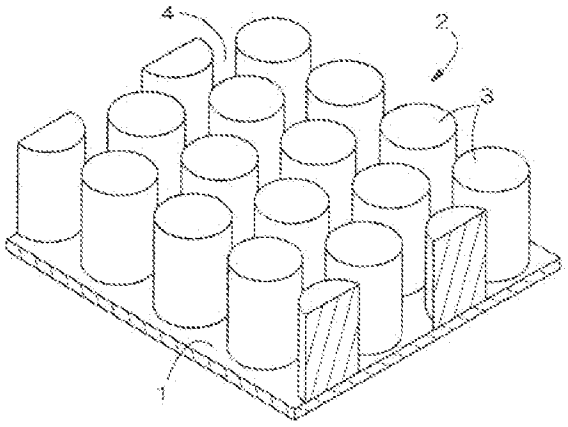


Fig. 2



Accordingly, entry of the instant amendment is respectfully requested at present.

Claim Rejections – 35 USC § 103(a)

Claims 1-14 have been rejected under the provisions of 35 USC § 103(a) as being unpatentable over **Ikeda et al. EP '278** (EP 1 246 278) in view of **Kawakami US '591** (US

5,641,591). Reconsideration and withdraw of this rejection is respectfully requested based on the following considerations.

Legal Standard for Determining Prima Facie Obviousness

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

"There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998) (The combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper.).

"In determining the propriety of the Patent Office case for obviousness in the first instance, it is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the

proposed substitution, combination, or other modification." *In re Linter*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The Supreme Court of the United States has recently held that the teaching, suggestion, motivation test is a valid test for obviousness, but one which cannot be too rigidly applied. See *KSR Int'l Co. v Teleflex Inc.*, 550 U.S. ____, 82 USPQ2d 1385 (U.S. 2007). The Supreme Court in *KSR Int'l Co. v. Teleflex, Inc.*, *ibid.*, reaffirmed the Graham factors in the determination of obviousness under 35 U.S.C. § 103(a). The four factual inquiries under Graham are:

(a) determining the scope and contents of the prior art;

(b) ascertaining the differences between the prior art and the claims in issue;

(c) resolving the level of ordinary skill in the pertinent art; and

(d) evaluating evidence of secondary consideration.

Graham v. John Deere, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (U.S. 1966).

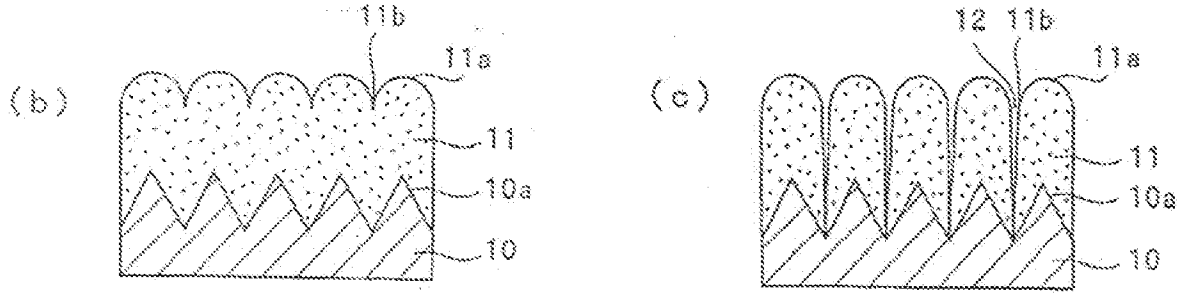
The Court in *KSR Int'l Co. v. Teleflex, Inc., supra.*, did not totally reject the use of "teaching, suggestion, or motivation" as a factor in the obviousness analysis. Rather, the Court recognized that a showing of "teaching, suggestion, or motivation" to combine the prior art to meet the claimed subject matter could provide a helpful insight in determining whether the claimed subject matter is obvious under 35 U.S.C. § 103(a).

Even so, the Court in *KSR Int'l Co. v. Teleflex, Inc., ibid.*, rejected a rigid application of the "teaching, suggestion, or motivation" (TSM) test, which required a showing of some teaching, suggestion, or motivation in the prior art that would lead one of ordinary skill in the art to combine the prior art elements in the manner claimed in the application or patent before holding the claimed subject matter to be obvious.

Distinctions Over the Cited Art

As shown in **Fig. 10(c)** of Ikeda et al., the dots of the reference are not separated and the column of the dots are connected each other close to the bottom thereof. It is just like the continuous film at the bottom, which means the occupancy rate of the dots on the current collector is almost 100% at the bottom. **Fig. 10(b)** of Ikeda et al. shows the continuous film before the charge-discharge cycle (*see* paragraph [0080] at the bottom of page 11 of Ikeda et al.).

For the Examiner's convenience, Figures 10(b) and 10(c) are reproduced below, as is paragraph [0080] of Ikeda et al. EP 1 246 278.



[0080] Figure 10(b) illustrates a noncrystalline silicon thin layer 11 deposited on a rough surface 10a of the copper foil 10. The surface 11a of the silicon thin film 11 is influenced by the irregularities on the surface 10a of the copper foil 10 to have similar irregularities. Before charge and discharge, the silicon thin film 11 remains undivided, as shown in Figure 10(b). When charging is effected, the silicon thin film 11 stores lithium therein and expands in volume. During the charge, the silicon thin film 11 appears to expand in both thickness and planar directions of the thin film, although the detail is not clear. During the subsequent discharge reaction, the silicon thin film 11 releases lithium therefrom and shrinks in volume. At this time, a tensile stress is produced in the silicon thin film 11. Probably such a stress concentrates at valleys 11b of the irregularities on the surface 11a of the silicon thin film 11 to result in the formation of gaps 12 that originate from the valleys 11b and extend in the thickness direction, as shown in Figure 10(c). Conceivably, the gaps 12 such formed relax the stress to allow the silicon thin film 11 to shrink without occurrence of falling-off from the copper foil 10.

The comparative Example 1 of the present invention shows the same condition as that disclosed in the reference of Ikeda et al, because comparative Example 1 shows a continuous film on the current collector and a charge-discharge cycle is applied to the continuous film, which makes it gaps on the continuous film.

That is, so to say, a comparison of Examples 1 and 2 and the comparative Example 1 in the instant application can effectively show the difference that exists between the presently claimed invention and the reference of Ikeda et al. According to the comparative data, the capacity after the charge-discharge cycle is lowered by 50% (comparative Example 1) while according to the present invention (Examples 1 and 2) the capacity is lowered by only 10 to 15%.

(See paragraphs [0047] to [0049] and [0053] to [0055] in the instant specification, which includes Table 1 set forth below.)

[Table 1]

	Capacity [mAh/g]	Charge and discharge efficiency [%]	Load characteristic (%)		Cycle characteristics (%) @ 50cycle
			1C discharge	2C discharge	
Embodiment 1	900	95	85	80	90
Embodiment 2	900	95	80	75	85
Comparison example 1	900	90	65	50	50

Accordingly, the advantageous effects that are associated with a separated dot system (as set forth in the instantly pending claims) and a continuous dot system (as disclosed and taught by Ikeda et al. EP '278) is apparent.

In addition, the present invention can not be made or arrived at by combination of Ikeda et al. and Kawakami, because according to Ikeda et al., the column portions are made by gaps formed on the continuous film while according to Kawakami, the dots are separated by projections on the current collector, so that the combination of both technologies as asserted by the USPTO is impossible. The references do not teach that the shape of the dots is a cylindrical column or cone; therefore, it also follows for this reason that the superior effectiveness of this invention is beyond imagination of one of ordinary skill in the art.

CONCLUSION

Based upon the amendments and remarks presented herein, the Examiner is respectfully requested to issue a Notice of Allowance clearly indicating that each of pending claims 1-14 are allowed and patentable under the provisions of Title 35 of the United States Code.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John W. Bailey (Reg. No. 32,881) at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.14; particularly, extension of time fees.

Dated: June 12, 2007

Respectfully submitted,

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